



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON 25, D. C.

IN REPLY REFER TO

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MEMORANDUM FOR: The Director of Central Intelligence.

Subject: The Soviet Air Forces.

Enclosures: (A) Summary of Soviet Air Forces.
(B) Soviet Air Order of Battle (AID Study 172/16B dated 1 July 1949), Copy #1.
(C) Operational Capabilities of the USSR in Certain Areas (AID Study 146/17).
(D) Characteristics and Performance Handbook USSR Aircraft.

1. In compliance with the verbal request of Rear Admiral R. L. Dennison, USN, Naval Aide to the President, Enclosure (A) is forwarded herewith.

2. Enclosures (B), (C), and (D) are forwarded for transmittal to the White House if so desired. It is requested that Enclosures (B), (C), and (D) be returned to the Office of Naval Intelligence when no longer required.

Thos. B. Inglis

THOS. B. INGLIS
Rear Admiral, U.S. Navy
Director of Naval Intelligence

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SUMMARY

The current estimate of the numerical strength of the Soviet Air Force is 17,000 aircraft and 600,000 personnel. 15,200 aircraft are combat types, 700 are transports and 1,100 are miscellaneous. It is estimated that not more than 50 per cent of the total airforce strength would be available during sustained operations.

The Soviet Air Forces are divided into four arms: The Military Air Force, the Long Range Air Force, the Fighter Defense Force, and the Naval Air Force.

The Military Air Force, with a principal mission of supporting ground forces, has 10,000 aircraft, 3,950 fighters (500 jets), 3,090 attack, 1,970 light bombers; the rest are transport and miscellaneous types.

The Long Range Air Force corresponds functionally to the U.S. Strategic Air Command. However, of its 1,800 aircraft, only 150 are of a long-range type. This type, a copy of our B-29, when fully armed has a combat radius of 1,800 miles with a 10,000 pound bomb. The remaining combat aircraft are light bombers, mostly of the twin-engine, short-range types.

The Fighter Defense Force is responsible for the air defense of the political and industrial centers of U.S.S.R. It is estimated to have 2,100 fighters of which 1,000 are jets.

The Naval Air Force, 3,100 aircraft, uses the same types of aircraft as the Military Air Force plus a torpedo-carrying type. It is organized to support each of six Soviet Fleets.

The Soviets are believed to be deficient in electronics, instruments, spare parts, high altitude bombing equipment, maintenance, and are relatively inexperienced in all-weather and long-range operations.

The 1948 production of aircraft in the Soviet Union is estimated at 12,000 aircraft of which approximately 6,200 were combat types including 1,619 jet fighters.

The Soviets are conducting intensive experimental and development efforts in jets, with emphasis on fighters.

The Soviet Air Show showed only normal progress in jet development. None of the swept-back wing fighters displayed is believed to be in series production.

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~~TOP SECRET~~THE SOVIET AIR FORCES

The strength of the Soviet Air Forces is currently estimated at 600,000 personnel and 17,000 aircraft assigned to operational units; 15,200 are known combat types, 700 are transports, and 1,100 are miscellaneous types, such as reconnaissance, liaison, ambulance, utility, plus some combat types the identification of which is not known. Approximately 21 per cent of Soviet air strength is located outside the borders of the U.S.S.R. — 2,700 aircraft in Europe and 850 aircraft in Korea and Soviet-occupied Manchuria. The Soviet Air Forces includes four arms — the Military Air Force, designed for close support of the ground armies, the Long Range Air Force, the Fighter Defense Force, and the Naval Air Force. These military air arms are supplemented by a Civil Air Fleet of approximately 3,000 major transports, 2,500 of which could be made available for military use in the event of hostilities. By D-Day plus six months, as result of mobilization, it is estimated that the Soviets could have 22,000 operational aircraft, 20,000 of which could be combat types. No recent information is available concerning stored reserves of Soviet aircraft. At the end of World War II, the air strength of the U.S.S.R. was estimated at 82,000 aircraft, including 18,000 new combat types in stored reserves. It is considered extremely unlikely that the Soviets disposed of excess aircraft to as great an extent as the Western Powers, and it is considered quite probable that the Soviets currently possess from 20,000 to 40,000 aircraft in stored reserves. The composition of the various components of the Soviet Air Forces is estimated as follows:

<u>Component</u>	<u>Fighters</u>		<u>Attack</u>	<u>Bombers</u>		<u>Trans.</u>
	<u>Conventional</u>	<u>Jet</u>		<u>Light</u>	<u>Medium</u>	
Military Air Force	3,450	500	3,090	1,970	—	380
Long Range Air Force	—	—	—	1,410	150	240
Fighter Defense Force	1,100	1,000	—	—	—	—
Naval Air Force	1,450	—	210	870	—	80
TOTAL	6,000	1,500	3,300	4,250	150	700

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<u>Component</u>	<u>Misc.</u>	<u>Total A/C</u>	<u>Air Bgts.</u>	<u>Personnel*</u>
Military Air Force	610	10,000	260	280,000
Long Range Air Force	—	1,800	55	63,000
Fighter Defense Force	—	2,100	40	52,000
Naval Air Force	490	3,100	85	86,000
TOTAL	1,100	17,000**	440	481,000

Headquarters, Training
Establishments, and
Service Elements

119,000

TOTAL PERSONNEL

600,000

* Personnel estimates are based upon arbitrary assumptions.

** Does not include 3,000 aircraft of the Civil Air Fleet or 400 aircraft of the MVD.

Military Air Force

The Military Air Force is composed of at least 15 air armies five of which are currently stationed outside the U.S.S.R. Total strength of these air armies is estimated at 10,000 aircraft broken down by types as shown above.

The basic light bomber of the Military Air Force is the TU-2. It is considered to have a 400 nautical mile combat radius with a 3,300 pound bomb load and a 500 nautical mile combat radius with a 2,200 pound bomb load.

The newer conventional fighter aircraft of the Military Air Force, such as the later models of the YAK-9 with internal fuel only, have a combat radius of 540 nautical miles. The older models of the YAK-9 with 100 gallons of external fuel have a 530 nautical mile combat radius; with internal fuel only they have a combat radius of 410 nautical miles. The MIG-9 jet fighter, which has been displayed with external fuel tanks, has a combat radius of 330 nautical miles with external fuel, and 440 nautical miles with internal fuel only. The YAK-15 jet fighter is estimated to carry external fuel and has a combat radius of 100 nautical miles with

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internal fuel and 300 nautical miles with external fuel.

Soviet IL-2 and IL-10 attack aircraft (Stormovik) have combat radii of 150 and 200 nautical miles respectively.

Long Range Air Force

The Long Range Air Force is directly subordinate to the Ministry of Armed Forces and consists of three air armies. Current strength of the Long Range Air Force is estimated to be 1,800 aircraft, broken down by types as shown in the table above.

It is currently estimated that the present combat radius of the Soviet B-29 is 1,800 nautical miles with a 10,000 pound bomb load. This radius could be extended to 2,150 nautical miles with the same bomb load by removing all defensive armament except the tail turret, reduction of the crew by one member, and the addition of an extra 520 gallons of fuel. There is no information available, however, indicating modification of the Soviet B-29 in this respect. Although there is very little evidence of Soviet use of aerial refueling techniques, use of such techniques would increase the combat radius of the Soviet B-29 by 40 per cent if one refueling operation were employed, and 75 per cent if two refueling operations were conducted.

The remaining bombers of the Long Range Air Force consist of a number of four-engine PE-8s and a large number of twin-engine bombers with characteristics similar to the American B-25. The PE-8 bomber, similar to the B-17, is considered obsolete, and in all probability not more than 150 of these aircraft are available. Combat radius of the PE-8 is approximately 1,100 nautical miles with 4,400 pounds of bombs. The twin-engine bombers are considered to have a 400 nautical mile combat radius with 3,300 pounds of bombs, and a 500 nautical mile combat radius with a 2,200 pound bomb load.

Fighter Defense Force

The Fighter Defense Force is charged with the responsibility for

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the protection of the political and industrial centers of the U.S.S.R.

The strength of the Fighter Defense Force is estimated at 2,100 interceptor aircraft, 1,000 of which are considered to be jet types (MIG-9 and YAK-15).

The Soviet jet fighters now operational are believed to be slightly inferior in performance to the best currently operational American jet types.

Although the Soviets are known to possess types of swept-back wing jet fighters, it is not believed that there are any operational units equipped with these jet types at the present time, but it is estimated that their appearance in operational units can be expected in the near future.

An evaluation of Soviet interception capabilities indicates that approximately 700 jets (MIG-9) would be able to perform combat operations at 41,000 feet, with a maximum speed of 425 knots at that altitude. The remaining 800 jets (YAK-15) would be able to operate at 34,000 feet with a speed of 420 knots at that altitude. The balance of the fighters are conventional types with combat operational capabilities from 26,000 to 37,000 feet, with the best types having a speed of 320 knots at combat altitudes. Combat altitude, as used above, is the altitude at which a rate of climb of 500 feet per minute can be maintained.

Naval Air Force

Strength of the Naval Air Force is estimated at 3,100 aircraft, broken down by types as shown in the table above. It is entirely land-based, i.e. there are no carrier-based aircraft, and is organized so as to provide support for each of the six Soviet fleets. The aircraft strength in operational units of the Naval Air Force with strengths by Fleet Air Forces is as follows:

<u>Fleet Air Force</u>	<u>Aircraft</u>	<u>Regiments</u>
North and South Baltic	800	21
North and South Pacific	1,450	40
Black Sea	500	14
Northern	350	10
TOTAL	3,100	85

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The Naval Air Force uses essentially the same type aircraft as the Military Air Force plus the basic torpedo bomber, the IL-4, with a combat radius of 675 nautical miles carrying a 2,200 pound bomb or torpedo load, and the PB-2 basic dive bomber with a 320 nautical mile combat radius with the same load. Torpedo operations of the Naval Air Force were conducted only during daylight hours in World War II, but present training emphasizes night torpedo operations and increased coordination between aircraft and surface units of the Soviet Navy.

Civil Air Fleet

It is estimated that the Civil Air Fleet possesses approximately 3,000 major transports. It is considered that 1,500 transports of the Civil Air Fleet are immediately available to the Soviet Armed Forces for airborne operations, but in an emergency it is believed this force could be augmented by an additional 1,000 transports from the normal Civil Air Fleet requirements and at least 200 transports from the Long Range Air Force. This gives a total of 2,700 major transports (C-47 type) available for airborne operations.

Training

There are indications that the status of training in the Soviet Air Forces is not comparable to U.S. standards, particularly as regards techniques for all-weather flying, high altitude bombing, long range navigation, and mass formation flying. There is no doubt the Soviets fully realize their weaknesses, and are endeavoring to raise their standards through a training program aimed at self-improvement coupled with the exploitation of new equipment. The outstanding feature of the present Soviet air training system is its flexibility. This allows it to shift emphasis in training as required through the movement of units to various locations where particular types of operations are emphasized.

Equipment

The effectiveness of an air force depends to a marked degree on the quality of its equipment both airborne and ground. In this particular

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field the Soviets are considered to lag behind the U.S. Although they have had access to many U.S. and German developments in the field of airborne electronic equipment, bombsights and navigational instruments there is no intelligence upon which to base an estimate as to whether they have produced these or similar equipments. One of their greatest inadequacies is their inability to mass produce micro-wave tubes. Without these tubes in quantities there will be deficiencies in their early warning radar, their ground control intercept radar and their airborne intercept radar. Deficiencies may also exist in navigation instruments, which might particularly affect Soviet long range bombing missions.

Production

Aircraft production in the Soviet Union during 1948 is estimated to have been 12,000 aircraft of which 6,246 were combat types (including military transports and miscellaneous military types). Of these combat aircraft approximately 1,305 were bombers, including an estimated 105 of the B-29 type; the remainder were fighters, including an estimated 1,619 jet, and ground attack types.

Developments and Technical Trends

The Soviets ended World War II with very little development in the fields of jet propulsion. However, a considerable number of jet engines, production facilities, research facilities, and development data were obtained from the Germans. These acquisitions have given the Soviets a greatly increased capability in the development of modern aircraft. There is every evidence that Russia is embarked upon a substantial program of aircraft development, and there is no longer any reason to believe that the Soviet aircraft program is materially behind our own. Indications are that Russia has departed from its World War II concept of air power as being primarily for the support of ground troops. The greatest development noted to date has been in fast, jet propelled interceptors for defense of the

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homeland, and long range bombers for strategic air warfare at greater distances from their boundaries than Russia has ever operated before.

It is probable that the Soviet B-29 type now in use will be further developed by installation of improved power plants but there is at present no indication of this. Development may also be expected in the field of jet bombers. In 1947 two of this type were displayed but neither was considered as advanced designs suitable for production. In July 1948 a twin engine jet bomber comparable to the U.S. B-46 type was flown. It is estimated to have a maximum speed of about 470 knots at S.L. It is known too that development was continuing after World War II on some of the German jet bomber projects. It is therefore estimated that in 1950 the Soviets will have light jet bombers in production.

Weaknesses

Although the Soviets possess formidable numbers of aircraft, there are weaknesses which will in all probability limit the operational effectiveness of Soviet air power. The Soviets are experiencing difficulty in replacing worn and damaged aircraft engines and critical parts; a shortage of specialized personnel is reported to exist and, in some cases, a possible shortage of aviation POL supplies has been indicated. It is estimated, therefore, that Soviet operational serviceability will be affected due to these shortcomings indicated above, and that the combat effectiveness of Soviet operational units would be not more than 50 percent for sustained operations. The Soviet Military and Naval Air Forces are considered as primarily tactical in nature, well versed in operations concerning support of ground armies in the field and coastal defense of naval installations. As regards air operations involving night and all-weather flying, high altitude bombing, and long range navigation, the Soviets are considered to be relatively inexperienced. These deficiencies are significant in estimating the strategic air capabilities of the Soviet Long Range Air Force and the mine-laying and torpedo operations of the Soviet Naval Air Force.

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The Soviet Aviation Day, 17 July 1949

The annual air show celebrating Soviet Aviation Day was held at Tushino airfield, Moscow, on 17 July. Approximately 500 aircraft participated of which 351 were military types. The numbers of the newer combat types exhibited closely correspond to those shown in the May Day parade. Following is a table indicating the more significant aircraft appearing in recent demonstrations and in the Aviation Day ceremony last year:

<u>Aviation Day</u> <u>17 July 1949</u>	<u>May Day</u> <u>1 May 1949</u>	<u>Aviation Day</u> <u>25 July 1948</u>
30 B-29	10 B-29	15 B-29
45 TU-2 (Twin-engine bomber)	45 TU-2 (twin-engine bomber)	36 TU-2 (twin-engine bomber)
45 Stormovik (probably IL-10)	45 IL-10 (Stormovik)	27 IL-10 (Stormovik)
36 YAK jet fighters (probably YAK-15)	45 YAK-15 (single jet fighter)	37 YAK-15 (single jet fighter)
45 MIG jet fighters (swept-back wing)	45 MIG jet fighters (swept-back wing)	32 MIG-9 (single jet fighter) (conventional wing)
36 La jet fighters (swept-back wing)	30 La jet fighters (swept-back wing)	

Although the group of 30 B-29s in this Aviation Day Show was the largest official showing to date, one formation of 40 aircraft was seen several days previously, apparently practicing for the event, and a formation of 56 was seen before the 1949 May Day show.

One new twin jet light bomber, similar to one exhibited in previous air day shows (1947 and 1948) was seen. Its principal difference from previous ones consisted of swept-back instead of straight wings. It probably represents another developmental model. Four swept-back wing fighters were shown individually of which 3 appeared to be modifications of Mikoyan or Lavochkin swept-wing jets. The fourth appeared to be exactly like the 45 Mikoyans shown in mass formation. U.S. Press reports of high speeds seem to have been based on the flights of these 4 fighters and the light bomber. With the exception of the three modifications or new models, all the swept-back wing jet fighters were shown in the May Day parade. There is no evidence to show that the swept-back wing types are in series production or that they are now in use by operational squadrons.

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